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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,165	05/12/2005	Shmuel Melman	06727/0202512-US0	2831
7278	7590	06/21/2006	EXAMINER	
DARBY & DARBY P.C. P. O. BOX 5257 NEW YORK, NY 10150-5257			WEEKES, LLOYD	
			ART UNIT	PAPER NUMBER
			2194	
DATE MAILED: 06/21/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/524,165

Applicant(s)

MELMAN, SHMUEL

Examiner

Lloyd Weekes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 May 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20051207.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because Figure 1 and Figure 2 have items, which are not labeled. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are also objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "36" and "37" in figure 1 have both been used to designate three drawings of distinct actuators. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the

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sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2,4,7,10,12,15,18 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2 and 10 recite that the cross-section of the annulus is substantially linear, what is meant by 'substantially linear' is unclear; the extent as to acceptable nonlinearity is not unambiguously set forth. The term 'substantially linear' will be interpreted as linear.

Likewise in claims 4, 12, 18 and 20 the limits of how unequal the internal diameter of the convex surface and the diameter of the diaphragm can be is not clear because of the use of the phrase 'substantially equal'. The phrase 'substantially equal' will be interpreted as equal.

Claims 7 and 15 are also indefinite as the degree of allowed unparallelism between the diaphragm and the piezoelectric is not specified by use of the phrase 'substantially in parallel'.

The phrase 'substantially parallel' will be interpreted as parallel.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,3,5,6,7,8,9,11,13,14,15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kishi (US Patent 4654554).

Claim 1: Kishi discloses:

A transducer, comprising:

a piezoelectric disk having a first diameter (column 1, lines 19-23; Fig. 3, item 2);

a diaphragm disk (column 4, lines 65-68) fixed to the piezoelectric disk, the diaphragm disk having a second diameter greater than the first diameter (Fig. 3, item 3); and

a cover (acoustic radiator in domed form; Fig. 8, item 11), comprising a convex surface bounded by an annulus (corrugated ring edge; Fig.8, item 12), which mates (jointed) with the diaphragm disk to form a generally plano-convex volume between the diaphragm disk and the cover.

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Claim 3: Kishi discloses a transducer according to claim 1, wherein a cross-section of the annulus (corrugated ring edge) comprises a sinusoid (Fig 8, item 12).

Claim 5: Kishi discloses:

A transducer according to claim 1, wherein the transducer is operative to convert electrical signals applied to the piezoelectric disk to sound waves radiated by the cover. (rain drip-proof speaker; column 7, lines 17-18)

Claims 6 and 14: Kishi discloses:

A transducer according to claim 1 and a loudspeaker according to claim 9, wherein the transducer is operative to generate electrical signals from the piezoelectric disk responsive to sound waves incident on the cover. (interphones-column 7, lines 17-19; microphone- column 7, lines 45-46).

Claim 7: Kishi discloses:

A transducer according to claim 1, wherein the diaphragm disk is fixed (laminated) substantially in parallel with and symmetrically to the piezoelectric disk. (Fig. 3)

Claim 8: Kishi discloses:

A transducer according to claim 1, wherein the diaphragm disk, the piezoelectric disk, and the cover comprise a common axis of symmetry. (Fig. 8)

Claim 9: Kishi discloses:

A loudspeaker comprising:

a piezoelectric disk having a first diameter (column 1, lines 19-23; Fig. 3, item 2);

a diaphragm disk (column 4, lines 65-68) fixed to the piezoelectric disk, the diaphragm disk having a second diameter greater than the first diameter (Fig. 3, item 3);

a cover (dome; Fig. 10, item 29), comprising a convex surface bounded by an annulus (corrugated ring edge; Fig. 10, item 26), which mates (joined) with the diaphragm disk to form a generally plano-convex volume between the diaphragm disk and the cover; and

a labyrinth (Fig. 10, item 27), which is fixedly coupled to a circumference of the annulus (corrugated ring edge; Fig. 10, item 26) and which is operative to provide a path for waves.

Claim 11: Kishi discloses a loudspeaker according to claim 9, wherein a cross-section of the annulus (corrugated ring edge) comprises a sinusoid (Fig 10, item 26).

Claim 13: Kishi discloses:

A loudspeaker according to claim 9, wherein the piezoelectric disk is operative to convert electrical signals applied to sound waves, and wherein the sound waves are radiated by the cover (acoustic radiator in domed form). (speaker; column 7, lines 61-66)

Claim 15: Kishi discloses:

A loudspeaker according to claim 9, wherein the diaphragm disk is fixed substantially in parallel with and symmetrically to the piezoelectric disk. (Fig. 10)

Claim 16: Kishi discloses:

A loudspeaker according to claim 9, wherein the diaphragm disk, the piezoelectric disk, the cover, and the labyrinth comprise a common axis of symmetry. (Fig. 10)

Claims 17 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Barlesi (FR 2567704).

Claims 17 and 19: Barlesi discloses a method for converting between sound and electrical energy and a method for forming a loudspeaker comprising:

- providing a piezoelectric disk having a first diameter (Fig. 3, item 100);
- fixing a diaphragm disk (Fig. 3, item 92), to the piezoelectric disk, the diaphragm disk having a second diameter greater than the first diameter; and
- mating a cover (Fig. 3, item 80), comprising a convex surface bounded by an annulus (Fig.3, item 82), with the diaphragm disk to form a generally plano-convex volume between the diaphragm disk and the cover.

fixedly coupling a labyrinth (Fig. 2, item 32), to a circumference of the annulus (Fig. 2, item 76) the labyrinth being operative to provide a path for sound waves.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi (US Patent 44654554) as applied to claims 1 and 9 above, and further in view of Barlesi (FR 2567704).

Claims 2 and 10: Kishi discloses a transducer as in claim 1 above and a loudspeaker as in claim 9 above, however, Kishi does not explicitly disclose the cross-section of the annulus being substantially linear. Barlesi discloses the cross-section of the annulus being linear (planar, column 7, lines 1-3, Fig. 3, item 82). Furthermore Barlesi utilizes a linear cross-sectioned annulus to provide support and to help fix the transducer to the housing, thus it would have been obvious to one having ordinary skill in the art at the time of the invention to use a substantially linear cross-sectioned annulus in Kishi. One skilled in the art at the time of Kishi's invention would have been motivated to do this, so as to easily provide support and to help connect one device to another.

Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi (US Patent 4654554) as applied to claims 1 and 9 above, and further in view of Guenther (US Patent 5802191).

Claims 4 and 12: Kishi does disclose a transducer and a loudspeaker, with each possessing a convex surface comprising an internal circumference, with this internal diameter being substantially equal to the diameter of the diaphragm disk, second diameter, as in claims 1 and 9 above; however Kishi does not explicitly disclose having a groove along the internal circumference and retaining the diaphragm disk in contact with the cover using this groove. Guenther discloses loudspeakers, which are securely mounted in receptacles by grooves along the receptacle's inner circumference. It would have been obvious to one having ordinary skill in the art at the time of the invention to include grooves in Kishi's invention, so as to securely hold the diaphragm disk to the cover and to allow the transducer and the loudspeaker to be easily manufactured.

Claims 18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlesi (FR 2567704) as applied to claims 17 and 19 above, and further in view of Guenther (US Patent 5802191).

Claims 18, 20 and 21: Barlesi does disclose a loudspeaker possessing a convex surface comprising an internal circumference, which is substantially equal to the diameter of the diaphragm disk, second diameter, as in claims 17 and 19 above; however Barlesi does not

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explicitly disclose having a groove along the internal circumference and retaining the diaphragm disk in contact with the cover using this groove or forming a labyrinth groove and retaining the annulus in the groove. Guenther discloses loudspeakers, which are securely mounted in receptacles by grooves along the receptacle's inner circumference. It would have been obvious to one having ordinary skill in the art at the time of the invention to include grooves in Barlesi's invention, so as to securely hold the diaphragm disk to the cover and to securely hold the annulus to the labyrinth.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Heinz (4531608)

Sashida et al. (4414436)

Power (5764595)

Schwab (5269499)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lloyd Weekes whose telephone number is 571-220-1067. The examiner can normally be reached on Mon-Thurs 9am -3:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Myhre can be reached on 571-220-1065. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LW *LW*
5/30/06


James W. Myhre
Supervisory Patent Examiner